LISTING AND AMENDMENT OF THE CLAIMS

1. (Currently amended) Process for cathodically electrodepositing a selected metallic material on a permanent or temporary substrate in nanocrystalline form with an average grain size of less than 100 nm using electrodeposition at a deposition rate of at least 0.05 mm/h, comprising:

(a) providing an aqueous electrolyte containing ions of said metallic material, and

(b) agitating the electrolyte at an agitation rate of ~~0.01~~ 0.0001 to 10 liter per min per cm^2 anode or cathode area.

2. (Previously presented) Process as claimed in claim 27 or 28, characterized in that single or multiple D.C. cathodic-current pulses between said anode and said cathode are present and have a peak current density in the range of about 0.01 to 20 A/cm^2.

3. (Previously presented) Process as claimed in claim 2, characterized in that the peak current density of the cathodic-current pulses is in the range of about 0.1 to 20 A/cm^2.

4. (Previously presented) Process as claimed in claim 27 or 28, characterized in that said selected metallic material is (a) a pure metal or alloys of metals selected from the group consisting of Ag, Au, Cu, Co, Cr, Ni, Fe, Pb, Pd, Pt, Rh, Ru, Sn, V, W, Zn, or (b) an alloy containing at least one of the elements of group (a) and alloying elements selected from the group consisting of C, P, S and Si.

5. (Previously presented) Process as claimed in claim 27 or 28, characterized in that the t_{on}-time period is in the range of about 1 to about 50 msec, the t_{off}-time period is in the range of about 1 to 100 msec and the t_{anodic}-time period is in the range of about 1 to 10 msec.

6. (Previously presented) Process as claimed in claim 27 or 28, characterized in that the duty cycle is in the range of 10 to 95 %.

7. (Previously presented) Process as claimed in claim 27 or 28, characterized in that the cathodic-current pulse frequency ranges from 10 Hz to 350 Hz.

8. (Previously presented) Process as claimed in Claim 1, characterized in that the deposition rate is at least 0.075 mm/h.

9. (canceled)

10. (Previously presented) Process as claimed in claim 1, characterized by agitating the electrolyte by means of pumps, stirrers or ultrasonic agitation.

11. (Previously presented) Process as claimed in claim 27 or 28, characterized by a relative motion between anode and cathode.

12. (Previously presented) Process as claimed in claim 11, characterized in that the speed of the relative motion between anode and cathode ranges from 0 to 600 m/min.

13. (Original) Process as claimed in claim 11, characterized in that the relative motion is achieved by rotation of anode and cathode relative to each other.

14. (Previously presented) Process as claimed in claim 13, characterized by a rotational speed of rotation of anode and cathode relative to each other ranging from 0.003 to 0.15 rpm.

15. (Previously presented) Process as claimed in claim 11, characterized in that the relative motion is achieved by a mechanized motion generating a stroke of the anode and the cathode relative to each other.

16. (Previously presented) Process as claimed in claim 11, characterized in that the anode is wrapped in an absorbent separator.

17. (Previously amended) Process as claimed in claim 1, characterized in that said electrolyte contains a stress relieving agent or a grain refining agent selected from the group consisting of saccharin, coumarin, sodium lauryl sulfate and thiourea.

18. (Previously presented) Process as claimed in Claim 1, characterized in that said electrolyte contains particulate additives in suspension selected from pure metal powders, metal alloy powders or metal oxide powders of Al, Co, Cu, In, Mg, Ni, Si, Sn, V and Zn, nitrides of Al, B and Si, carbon C, carbides of B, Bi, Si, W, or organic

materials, whereby the electrodeposited metallic material contains at least 5 % of said particulate additives.

19. (Original) Process as claimed in claim 18, characterized in that the electrodeposited metallic material contains at least 10 % of said particulate additives.

20. (Original) Process as claimed in claim 18, characterized in that the electrodeposited metallic material contains at least 20 % of said particulate additives.

21. (Original) Process as claimed in claim18, characterized in that the electrodeposited metallic material contains at least 30 % of said particulate additives.

22. (Original) Process as claimed in claim18, characterized in that said electro deposited metallic material contains at least 40 % of said particulate additives.

23. (Previously presented) Process as claimed in claim 18, characterized in that the particulate additives average particle size is below 10 μm.

24. (Previously presented) Micro component produced by an electrodeposition process as claimed in claim 1, having a maximum dimension of 1 mm, an average grain size equal to or smaller than 1000 nm, the ratio between the maximum dimension and the average grain size being greater than 10.

25. (Original) Micro component as claimed in claim 24, characterized in that the ratio between the maximum dimension of the micro component and the average grain size is greater than 100.

26. (Previously presented) Micro component as claimed in claim 24, characterized by having an equiaxed micro structure.

27. (Previously presented) Process according to Claim 1 characterized by:

(a) providing an anode and a cathode in contact with said electrolyte,

(b) passing single or multiple D.C. cathodic-current pulses between said anode and said cathode at a cathodic-current pulse frequency in a range of about 0 and 1000 Hz, at pulsed intervals during which said current passes for t_{on}-time period in the range of about 0.1 to 50 msec and does not pass for a t_{off}-time period in the range of about 0 to 500 msec,

(c) Passing single or multiple D.C. anodic-current pulses between said cathode and said anode at intervals during which said current passes for a t_{anodic}-time period in the range of 0 to 50 msec,

(d) a duty cycle being in a range of 5 to 100%; and

(e) a cathodic charge ($Q_{cathodic}$) per interval being always larger than a anodic charge (Q_{anodic}).

28. (Previously presented) Process according to Claim 27, characterized by maintaining said electrolyte at a temperature in the range between 0 to 85°C.

29. (Previously presented) Process as claimed in claim 4, characterized in that said selected metallic material is a pure metal selected from the group consisting of Co and Ni, containing P.

30. (Previously presented) Process as claimed in claim 1, characterized in that said selected metallic material is an alloy of Fe with a pure metal selected from the group consisting of Co and Ni.

31. (currently amended) Process for cathodically electrodepositing a selected metallic material on a permanent or temporary substrate in nanocrystalline form with an average grain size of less than 100 nm at a deposition rate of at least 0.05 mm/h, comprising:

providing an aqueous electrolyte containing ions of said metallic material, agitating the electrolyte at an agitation rate in the range of 0.0001 to 10 liters per min per cm^2 anode or cathode area ~~or at an agitation rate in the range of 1 to 750 milliliter per min per applied Ampere average current~~, and

passing single or multiple cathode-current pulses between said anode and said cathode.

32. (Previously presented) Micro component produced by a pulse electrodeposition process according to claim 31, having a maximum dimension of 1 mm, an average grain size equal to or smaller than 1000 nm, the ratio between the maximum dimension and the average grain size being greater than 10.

33. (currently amended) Process for cathodically electrodepositing a selected metallic material on a permanent or temporary substrate in nanocrystalline form with an average grain size of less than 100 nm at a deposition rate of at least 0.05 mm/h, comprising:

providing an aqueous electrolyte containing ions of said metallic material, agitating the electrolyte at an agitation rate in the range of 0.0001 to 10 liter per min per cm^2 anode or cathode area ~~or at an agitation rate in the range of 1 to 750 ml solution per minute per applied Ampere average current.~~